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THE NEARCTIC SPECIES OF ITEAPHILA AND APALOCNEMIS.

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In Curran's Manual of the Genera of Diptera the following species lead to *Iteaphila*, Couplet 30 of the family Empididae. The flies are alpine for the most part, sometimes locally abundant for a few days hovering over the flowers of willow, currant or wild cherry.

There has been much confusion regarding the identity of the species of *Iteaphila*, not only of the American forms but also those of the Palaearctic region. There is sometimes great sex dimorphism, considerable variability, and apparently at times an enormous range of discontinuous distribution. The earlier described species of Walker and Kirby are so briefly characterized that in the absence of types it is sheer guess-work to make identifications. While some twenty species of *Apalocnemis* have been described from South America the genus has hitherto not been known to occur in North America.

In the following records the specimens have been collected by myself, unless otherwise indicated. Types of the new species are located in my collection. The scattered distribution record is undoubtedly the result of the brief appearance of the adults, coinciding with the springtime blossoming of their favored flowers. Collecting done at any other time would miss the *Iteaphilas*.

DISTINCTION BETWEEN ITEAPHILA AND APALOCNEMIS.

Iteaphila Zetterstedt.

Third antennal joint elongate, strap-shaped, but slightly tapering, three or four times as long as basal depth, the style minute and tipped with a microscopic hair, basal joints of antennae nearly bare; palpi slender, with loose hairs or nearly

bare, proboscis porrect, usually about as long as the height of the head; pygidium terminal, the penis and penis-sheath curving or bent backwards, the principal valve lateral, basal dorsal valve appendiculate; female abdomen conical, ending in a pair of distinct slender styles; ambient vein undeveloped.

Apalocnemis Philippi.

Third antennal joint short-oval, as long as deep, ending in a thickened aristiform style, which in our species is nearly three times the length of the third joint, basal joints of antennae strongly setose; palpi subclavate, strongly setose, proboscis much shorter than the head-height; pygidium somewhat compressed, round in outline and reflexed, the penis and penis-sheath curving forward, no lateral valve, basal dorsal valve without appendage; female abdomen posteriorly bluntly compressed, the terminal styles small, short and wide; ambient vein strong.

KEY TO THE NEARCTIC SPECIES OF ITEAPHILA.

1. Males: eyes contiguous; abdomen ending in valvate genitalia 2
Females: eyes widely separated; abdomen conical, ending in a pair of styles 10
2. Pygidium much larger than segments 5 and 6, main valve rather oblong, wide at apex, basal valve erect and very thin, penis-sheath curving downwards posteriorly around end of main valve (fig. 1); base of antennal style square. (U. S., Can.) *I. americana*, n. sp.
Pygidium much smaller, main valve rather triangular, with more or less pointed backward-directed apex, which sometimes is infolded, penis-sheath not encircling main valve (fig. 2) 3
3. Keel of pygidium provided with a caudal bunch of rather long black setae; proboscis 1.5 to 2 times head-height; 10 scutellars; body rather polished. (Alaska, B. C., Wash., Mont.) *I. triangula* Coquillett
Keel of pygidium with scattered hairs; proboscis usually about as long as head, or shorter, but longer than head in *fuliginosa* 4
4. Dorso-basal valve of pygidium short and broad, shaped like a boxing glove; fork of third vein at or beyond end of second vein; sides of notum with abundant fine hair; about 20 scutellars. (Rocky Mts., Wash.)
I. orchestris Melander

- Dorso-basal valve pointed, higher than wide (if more or less mitten-shaped and hairs of body pale, see *vetula*); fork of third vein usually distinctly before end of second vein 5
5. Scutellum with about 8 to 12 marginal bristles; mesonotum with inconspicuous hairs; legs fuscous; wings hyaline or subhyaline 6
- Scutellum with about 14 to 20 marginal bristles, if fewer the wings are infumated 7
6. Hairs of thorax and abdomen pale, thorax gray when seen from in front. (Wash., Ida.) **I. vetula**, n. sp.
Hairs of body black, irregularly scattered; wings subhyaline. (Alaska) *I. conjuncta* Coquillett
7. Notum fulvous when seen from front, hairs and bristles black 8
- Notum hoary when seen from front, hairs of notum and abdomen long and white. (Alta.) **I. cana**, n. sp.
8. Sides of notum with abundant long fine hair, acrostichals in 4 irregular rows; base of antennal style oblong 9
- Notum with only minute inconspicuous hair, acrostichals microscopic, irregularly biseriate; base of style square; wings infumated. (Wash., Ida., B. C.) **I. napaea**, n. sp.
9. Proboscis about as long as head-height; wings subhyaline, veins heavy. (Northern States, Can.)
- I. Macquarti* Zetterstedt
- Proboscis longer than head-height; wings fuliginous, veins thin. (Wash., Or.) **I. fuliginosa**, n. sp.
10. Front glistening black 11
- Front hoary and dull 15
11. Thorax cinereous when viewed from front; about 12 scutellars 12
- Thorax black, subshining, sometimes lightly dusted; usually less than 12 scutellars; proboscis usually shorter than head-height; base of antennal style square; wings lightly fuliginous, fork of third vein before end of second (if third vein is forked beyond second vein see *orchestris*). (U. S., Can.) **I. americana**, n. sp.
12. Bristles and hairs white, even those of scutellum. (Wash., Ida.) **I. vetula**, n. sp.
Bristles and hairs black 13
13. Legs yellowish; dorsocentral and acrostichal rows less pollinose than remainder of notum; basal joint of antennal

- style square; veins yellowish. (Wash., Ida., B. C.)
I. napaea, n. sp.
 Legs mostly black; basal joint of style oblong; veins fuscous 14
14. Third vein forked beyond end of second vein, veins thin.
 (Western) *I. orchestris* Melander
 Third vein forked before end of second vein, veins coarse.
 (Eastern) *I. cormus* Walker
15. Thorax and abdomen black in ground color, viewed from front
 dull hoary 16
 Thorax, abdomen and legs testaceous; proboscis shorter than
 head; 6 to 8 scutellars; discal cell as long as last section
 of fourth vein. (Ida.) **I. testacea**, n. sp.
16. Bristles and hairs of thorax black, about 18 scutellars 17
 Bristles and hairs of body whitish, scutellum with fewer
 bristles; base of antennal style oblong. (Alta.)
I. cana, n. sp.
17. Proboscis equal to head-height, labella fleshy; base of antennal
 style oblong; discal cell longer than last section of fourth
 vein, sections of fifth vein proportioned 3:1; hairs of
 abdomen white. (Northern States, Can.)
I. macquarti Zetterstedt
 Proboscis longer than head, thin; base of antennal style almost
 invisible; discal cell equal to last section of fourth vein,
 sections of fifth vein 2:1; hairs of abdomen black, sparse.
 (Alaska, Wash., Mont.) *I. triangula* Coquillett

LIST OF THE SPECIES OF *Iteaphila*, WITH NOTES AND DESCRIPTIONS.***Iteaphila americana***, n. sp.

Black over all. Occiput shining, its hairs moderately sparse to rather abundant; proboscis slender, porrect, not exceeding the head-height; palpi shorter than the proboscis. Dorsum of thorax viewed from front or behind lightly dusted with brownish, from above almost matte, acrostichals minute, anterior dorsocentrals merging with the very sparse lateral hairs. Abdomen shining, hairs shorter than the segments, sometimes pale, lateral valves resembling half of a canoe with upturned stern (see fig. 1). Legs without conspicuous hairs. Wings moderately infumated, the stigma darker, discal cell rather blunt, third vein forking before the end of second, the anterior branch ending midway between the second and third veins, sections of fourth vein proportioned 1:2:3 to 1:3:4, of fifth

vein 2: 1; alulae and fringe blackish, halteres black. Length 3 mm., rarely 4 mm.

Female. Head and body more shining black, legs piceous, alulae fuscous, wings subhyaline.

Holotype and allotype collected at the Thumb of Yellowstone Lake, Wyoming, 16 VII, 1923, on flowers of mountain ash. Eighteen male and thirty-five female paratypes. WASHINGTON: Skyline on Mount Baker, 10 VIII; Paradise on Mount Rainier, 28 VI; van Trump on Mount Rainier, 21 VII; Tacoma, 27 V; Olympia, 31 III (T. Kincaid); Seattle, 17 III to 15 IV (Kincaid); Ilwaco, 25 V; Snoqualmie Pass, 29 VI; South Bend, 23 V; Nahcotta, 24 V; Deer Park, 5 V. IDAHO: Lake Waha, 9 VI; Moscow Mountain, 17-25 VI. BRITISH COLUMBIA: Vancouver, 13 V (R. S. Sherman). OREGON: Mt. Hood, 25 VI. MONTANA: Grinnell Lake in Glacier National Park, 24 VII. COLORADO: Monarch Pass, 11,400 ft., 21 VI. NEW MEXICO: Las Vegas Mts., 11,000 ft., June (T. D. A. Cockerell). MISSOURI: Atherton, 13 IV (C. F. Adams). QUEBEC: Aylmer, 28 V (C. H. Curran).

This is certainly the Nearctic expression of the European *I. obscura* Zetterstedt as interpreted by Frey. The points of difference as gleaned from Dr. Frey's detailed description of Zetterstedt's species are here shown.

	<i>obscura</i>	<i>americana</i>
Proboscis	Short	About equal to head
Ac and Do bristles . .	In several rows	Uniserial
Sc bristles	16-20	10-14
Penis	Yellow	Black
Veins	Strong	Thin

However, there is doubt whether Frey's species is the same as Zetterstedt's because the original description called for a dichoptic male *Hilara* with rather wide front. Even if Zetterstedt had mistakenly used a female, which is quite possible because Frey found only a female in the type collection, the whitish halteres, short antennae with ovate-conical third joint, and the somewhat thickened front femora would preclude the present species. For these reasons the Nearctic specimens are given their own specific name.

***Iteaphila cana*, n. sp.**

Occiput lightly cinereous, its hairs black, moderate; basal piece of antennal style oblong; proboscis equal to head-height; palpal hairs long but sparse. Thorax opaque, cinereous, no

glistening spot on pleura; anterior dorsocentrals abundant, last three fine, long and black, acrostichals numerous, irregular, biseriate, about 20 black scutellars, lateral hairs abundant and pale, lateral bristles delicate and black, humeri hairy, the humeral bristle hair-like. Abdomen cinereous, subshining, hairs as long as the segments; pygidium nearly bare, the dorsal valves elongate triangular, with dusky hairs, the appendage long. Knees yellowish, hairs of legs pale, those of femora longer than the diameter of the joints. Wings subhyaline, stigma elongate, fuscous, veins firm and fuscous, discal cell blunt, third vein forked just before end of second vein, the anterior branch ending at two-fifths the space between the second and third veins, sections of fourth vein proportioned 1:4:4, of fifth vein 2.5:1; alulae pale, the fringe whitish; halteres black with fuscous stalk. Length, 3.75 mm.

One male and three females, Edmonton, Alberta, 26 IV, 1931 (E. H. Strickland) and one female, Fawcett, Alberta, 8 V, 1934 (Strickland). The females have the proboscis short and fleshy, the femoral hairs short, and the thoracic hairs short and sparse.

Iteaphila conjuncta Coquillett.

Described as doubtfully an *Empis* from three small specimens from Sitka and Orca, Alaska. I have a male from Moscow Mountain, Idaho, which may be the same.

Iteaphila cormus Walker.

C. W. Johnson identified specimens of an *Iteaphila* from Mount Washington, New Hampshire, as *Empis cormus* Walker, which originally was collected in the Hudson Bay Region. It is quite possible that *cormus* is an *Iteaphila*, but Johnson's species is different, lacking vittae on the thorax. As I have only females of Johnson's species I am not redescribing it as new, but include the species in the key under Walker's name.

Iteaphila fuliginosa, n. sp.

A large, black, hairy species with dark wings. Occiput hairy, very lightly dusted. Dorsum of thorax quite matte, when viewed from front or rear showing a coating of fulvous pollen, humeri and posterior calli castaneous, pleura lightly cinereous, without shining spot; dorsocentrals fine, irregularly placed in a band, scutellum with supplementary hairs above the full marginal row, no humeral bristle, lateral bristles small.

Abdomen with thin brown dust, the hairs rather abundant, nearly as long as the individual segments. For the pygidium see fig. 2. Legs rather hairy, the hairs of the femora longer than their diameter. Stigma of wings very dark; second vein long, making the first submarginal cell half as long as the second along the costa, sections of fourth vein 1:5:5, of the fifth vein 3.75:1; alulae fuscous, halteres black, with piceous stem. Length 6 mm.

Six males. Holotype, Seattle, Washington, received from Professor O. B. Johnson, under Coquillett's determination as *Empis luctuosa* Kirby; one male from Mary's Peak, Oregon, 8 III (D. A. Wilbur).

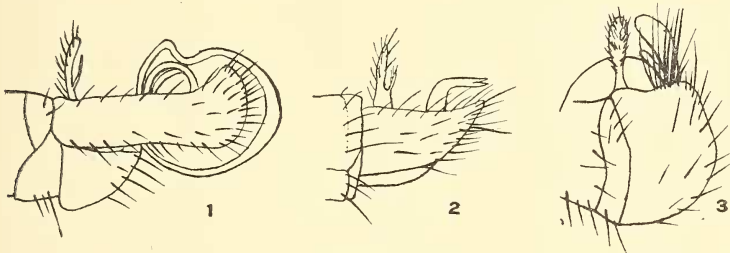


FIG. 1. Pygidium of *Iteaphila americana*, n. sp., showing the canoe-shaped lateral valve, the appendiculate basal valve and the large encircling penis and sheath. FIG. 2. Pygidium of *Iteaphila fuliginosa*, n. sp. FIG. 3. Pygidium of *Apalocnemis hirsuta*, n. sp., showing the thin forward-curving penis, the claviform basal dorsal valve, the small posterior valve, the heavy, blunt penis-sheath, and the globose hypandrium.

Iteaphila luctuosa Kirby.

Coquillett identified specimens of the preceding species from Washington State as *Empis luctuosa* Kirby, which was originally described from Eastern Canada. According to Coquillett, Kirby renamed the female of this dimorphic species *Empis geniculata*.

Iteaphila macquarti Zetterstedt.

This is the genotype of *Iteaphila*, occurring in Northern Europe, Siberia and America. It has been reported from Quebec and from New Hampshire. I have specimens before me from the following western localities. COLORADO: Pikes Peak, 19 VI. ALBERTA: Banff (C. B. D. Garrett). BRITISH COLUMBIA: Vancouver (R. S. Sherman); South Fork (R. P. Currie). WASHINGTON: Olympia

(T. Kincaid); Snoqualmie Pass, 29 VI. OREGON: Three Sisters Mts. (H. A. Scullen); Mt. Hood, 25 VI. The species occurs on *Salix* flowers, both in America and in Europe, a habit which prompted the formation of the genus name, for *Iteaphila* literally means fond of the willow.

***Iteaphila napaea*, n. sp.**

Brownish black, bristles and hairs black, legs dark fuscous, wings quite smoky. Occiput lightly dusted with brown, the hairs moderately dense and short; proboscis much shorter than head, palpi nearly bare. Mesonotum when seen from front, side or rear coated with fulvous pollen, in oblique view from front the acrostichal and dorsocentral stripes resume the dark ground color, from above the notum is almost matte brownish black, pleura lightly and uniformly dusted; usually 14 scutellars, lateral hairs of notum minute and scattered, lateral bristles short. Hairs of abdomen almost equal to length of segments, scattered; upper valves of pygidium narrowly triangular, the appendage short, penis fuscous. Legs simple, slender, the femoral hairs shorter than the diameter of their joints. Stigma and veins castaneous, veins thin; third vein forked at or before the end of the first vein, the second submarginal cell wider than the first along the costa, sections of fourth vein proportioned 1:5:6, of fifth vein 3:1; halteres and alulae blackish. Length 3.5 mm.

Female. Quite different from the male, the mesonotum distinctly gray pollinose, the pollen like decumbent fur with the direction of inclination producing color changes according to the angle of view, the dorsocentral and acrostichal rows show distinctly in oblique view; legs, abdomen and halteres usually almost testaceous, as also sometimes the prothorax, humeri, pteropleura and coxae; alulae and veins at base yellowish.

Six males and twenty-one females, some of them collected from blossoms of wild cherry. Holotype and allotype from Lake Waha, south of Lewiston, Idaho, 9 VI, 1918. Paratypes from Summerland on Mount Rainier 24 VII, 1924; Tacoma, 27 V, 1917; Loon Lake, Wash., 16 V, 1924; Valleyford, Wash., 29 V, 1911; Kaslo, B. C. (R. P. Currie).

Iteaphila orchestris Melander.

Described from Las Vagas Range, New Mexico. I have additional specimens from the following localities. COLORADO: Fort

Collins (N. Banks collection); Monarch Pass, 8,000 ft., 21 VI, 1942. ALBERTA: Banff (N. B. Sansan); Lake Louise, 29 VII, 1935. BRITISH COLUMBIA: Emerald Lake, 30 VII, 1935. WASHINGTON: Mount Rainier, various stations, July and August.

(*Iteaphila*) *peregrina* Melander.

For this species from San Diego, California, I erected *Acallomyia*, a new subgenus of *Empis*, in *Genera Insectorum*, fasc. 185, 1927.

***Iteaphila testacea*, n. sp.**

Female. Head black, subpruinose; thorax, abdomen, legs and halteres testaceous. Antennae black, base of style square; mouthparts black. Mesonotum not shining, lightly pruinose when viewed from front; last two dorsocentrals long, the others minute, acrostichals minute and biseriate, lateral setae distinct, lateral hairs sparse and minute. Abdomen nearly bare. Legs slender, with no conspicuous hairs. Wings hyaline, veins testaceous at base, apically becoming brownish, stigma weak; discal cell narrow, third vein forked before end of second vein, the branch ending almost midway between the ends of the second and third veins, sections of fourth vein proportioned 1:3:4, of fifth vein 2:1. Length 3 mm.

Three specimens from Lake Waha, Idaho, 9 VI, 1918 and one from Bovill, Idaho, 18 VI, 1911. This cannot be a pale mutant of any of the other species.

Iteaphila triangula Coquillett.

This species was originally described as an *Empis* from Lowe Inlet, B. C., and several places in Alaska. It occurs on flowers of salmon-berry. I have identified it also from the following localities. BRITISH COLUMBIA: Vancouver (R. S. Sherman). WASHINGTON: Tacoma, 12 IV, 1913. Glacier National Park, Grinnell Lake, 24 VII, 1935. One female from Western Washington is apparently a yellow mutant. Its body and legs are testaceous, superficially resembling the preceding species.

***Iteaphila vetula*, n. sp.**

Occiput lightly dusted, its hairs short, sparse and pale; base of antennal style square; proboscis shorter than head-height, palpi nearly bare. Thorax lightly dusted; anterior dorsocentrals minute, irregular and uniserial, acrostichals biseriate, lateral hairs sparse but rather long, merging with the side

bristles. Abdomen shining, its hairs fine, rather sparse but nearly as long as the segments; pygidial hairs short and sparse, the upper valves broadly triangular and with short thumb. Legs pale fuscous, hairs of femora whitish and about equal to their diameter. Wings clear hyaline, veins fuscous, yellowish at base, stigma fuscous; discal cell broad and blunt; third vein forked opposite the end of the second vein, the branch ending about one-third the costal distance between the second and third veins, sections of fourth vein proportioned 1:4:4, of fifth vein about 2:1; alulae yellowish, halteres blackish, the stem fuscous. Length 3.75 mm.

Holotype collected at Loon Lake, Washington, 16 V, 1924. One male paratype taken with the holotype and two males from Craig's Mountain, Idaho, 8 VI, 1918.

A female from Kettle Falls, Washington, 3 V, 1912, has a shorter stigma, more dorsocentral setulae, the fork of the third vein before end of second vein, and femoral hairs shorter.

CHARACTERIZATION OF THE NORTH AMERICAN SPECIES OF APALOCNEMIS.

Eyes of male microscopically pubescent (hard to see when head is shrunken), contiguous two-fifths the distance below the ocelli, leaving a small, opaque, narrowly triangular front, scarcely indented at antennae, the upper facets moderate and merging into the smaller lower ones; front of female rather wide, without bristles; ocellar triangle prominent, with four hairs; mouthparts fleshy, short, directed forward in both sexes. Thoracic bristles long but not strong, pleura bare except for a few setulae above front coxae; 1 hum., 1 intrahum., 1 posthum., 3 npl., a varying number of supra-alar hair-like bristles. Pygidium compact, with two sets of small dorsal valves, penisheath stubby, curving forward between the posterior dorsal valves, penis hidden in most of the specimens, when exerted very slender and uniformly curving forward to encircle the base of the pygidium on the left side. Legs simple, slender, with no long setae. Anal lobe of wing full, axillar angle openly rounded and about 100 degrees, veins firm, stigma pronounced, auxiliary vein straight, attaining costa, third vein forked much before end of second vein and ending at wing-tip, anal vein represented by a fold.

If, as J. E. Collin believes, my New Zealand genus *Timalphes* is the same as the South American *Apalocnemis* it would seem that

the extension into North America came from the Southern Hemisphere. Although *Timalphes* presents a very different appearance from the new species here described, being dull-colored with few stiff setae, the salient generic characters are the same and coincide with those given by Collin for the South American forms. The differences are no greater than those to be found when comparing extreme species of *Empis* or of *Rhamphomyia*. However, the resemblance of the new species to the *Iteaphilas* in habitus, habits and distribution lead one to think that both may have been derived from some boreal group, and that the placement with the southern forms is the result of an artificial classification.

KEY TO THE NEARCTIC SPECIES OF *Apalocnemis*.

- Anterior dorsal valve of pygidium smaller than posterior valve; 6-8 scutellar bristles, 7-12 dorsocentrals, about 8 bristles above notopleural suture; none of abdominal hairs as long as segments. (Cal.) **A. oreas**, n. sp.
- Anterior dorsal valve larger than posterior valve; 10-16 scutellars, 13-15 dorsocentrals, 12-20 bristles above notopleural suture; many abdominal hairs as long as segments. (Oreg.)
A. hirsuta, n. sp.

Apalocnemis oreas, n. sp.

Black, subshining, hairs long and abundant. Occiput hairy, the hairs longer than the third antennal joint; palpi bristling with numerous setae, longer than proboscis. Thorax shining black, sometimes showing a very slight cupreous tinge, pleura very lightly gray-dusted; acrostichals long, biseriate, alternating, about 6 to the row, usually 6 scutellars. Abdomen very lightly dusted, quite polished; pygidium polished, the keel (hypandrium) compressed, carinate behind, antero-dorsal valves erect, hastate, setulose, without appendage, apical valves erect, oblong, obliquely truncate, penis filamentous, usually retracted. Legs of female less hairy than of male, male femora loosely seriatly hairy above and below, the hind femora with decumbent hairs above toward knee, pulvilli white. Wings slightly infumated, veins black and strong, stigma elongate, sections of fourth vein proportioned about 1:3.5:5, sections of fifth vein equal; alulae and fringe black, halteres deep black. Length 4 mm.

Thirty-three males and nineteen females, collected at Big Pines Recreation Area, Los Angeles County, California, 23 V, 1945,

elevation about 6500 ft., on flowers of *Ribes* growing at the edge of an alpine meadow. Latin, *oreas*, a mountain nymph.

***Apalocnemis hirsuta*, n. sp.**

Very close to *oreas*, differing mainly in the greater development of the hairs, as indicated in the key. Thorax and abdomen more strongly dusted, when viewed from front, side or rear becoming opaque brownish. Pygidium robust, the hypandrium scarcely compressed and not carinate, both valves slenderly clavate, the posterior glistening, a lateral fringe of about 8 setae present on upper edge of hypandrium opposite base of posterior valve. Wings slightly more opaque than in *oreas*, the veins thinner. Length 4 mm.

Four males, Mount Hood, Oregon, at 5000 ft. elevation, 25 VI, 1935.

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